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(54) Nonchromate metallic surface treating agent for PCM use, method for PCM surface treatment, and treated PCM steel panel

(57) The present invention has for its object to provide a metallic surface treating agent for PCM use, which is capable of imparting high processability and corrosion resistance to PCM steel panels with the additional advantage of improved storage stability, a method for surface treatment of a PCM steel panel, a method of producing a PCM steel panel, and a PCM steel panel as produced by said method.

This invention provides a nonchromate metallic surface treating agent for PCM use which comprises, in each liter thereof,

(a) a silane coupling agent and/or a hydrolytic con-

densation product thereof in an amount of 0.01 to 100 g/l,

(b) water-dispersible silica in a proportion of 0.05 to 100 g/l (solids), and

(c) a zirconium compound in an amount of 0.01 to 50 g/l in terms of zirconium ion and/or a titanium compound in an amount of 0.01 to 50 g/l in terms of titanium ion.



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EUROPEAN SEARCH REPORT

Application Number
EP 01 40 0522

DOCUMENTS CONSIDERED TO BE RELEVANT									
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)						
X	EP 0 358 338 A (ALCAN INT LTD) 14 March 1990 (1990-03-14) * examples 1-10,14 *	1	C23C22/68 C23C22/34						
X	US 4 330 446 A (MIYOSAWA YOSHIAKI) 18 May 1982 (1982-05-18) * column 2, line 13 - column 3, line 12; claims * * column 6, line 10 - line 45 * * column 7, line 42 - line 46 * ---	1,3,4							
A	EP 0 878 519 A (NIPPON PAINT CO LTD ;NIPPON STEEL CORP (JP)) 18 November 1998 (1998-11-18) * page 6, line 31 - line 39; claims; example 1; table 1 * & JP 11 029724 A 2 February 1999 (1999-02-02) ---	1-6							
D.A									
A	DATABASE WPI Section Ch, Week 197931 Derwent Publications Ltd., London, GB; Class A82, AN 1979-56933B XP002263689 & JP 54 077635 A (KANSAI PAINT CO LTD), 21 June 1979 (1979-06-21) * abstract *	1-6	TECHNICAL FIELDS SEARCHED (Int.Cl.7) C23C						
A	EP 0 979 880 A (NIPPON PAINT CO LTD) 16 February 2000 (2000-02-16) * claims *	1-6							
<p>The present search report has been drawn up for all claims</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Place of search</td> <td style="width: 33%;">Date of completion of the search</td> <td style="width: 34%;">Examiner</td> </tr> <tr> <td>MUNICH</td> <td>3 December 2003</td> <td>Mauger; J</td> </tr> </table>				Place of search	Date of completion of the search	Examiner	MUNICH	3 December 2003	Mauger; J
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MUNICH	3 December 2003	Mauger; J							
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons S : member of the same patent family, corresponding document							
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ON EUROPEAN PATENT APPLICATION NO.**

EP 01 40 0522

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
 The members are as contained in the European Patent Office EDP file on
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03-12-2003

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
EP 0358338	A	14-03-1990		AT 109217 T AU 625900 B2 AU 3951189 A BR 8904061 A CA 1337145 C CN 1040811 A DE 68917059 D1 DE 68917059 T2 DK 394089 A EP 0358338 A2 ES 2059772 T3 IN 176027 A1 JP 2085373 A NO 893250 A PT 91432 A ,B ZA 8905972 A	15-08-1994 16-07-1992 15-02-1990 27-03-1990 03-10-1995 28-03-1990 01-09-1994 17-11-1994 13-02-1990 14-03-1990 16-11-1994 23-12-1995 26-03-1990 13-02-1990 08-03-1990 30-05-1990
US 4330446	A	18-05-1982		JP 1045723 C JP 53092846 A JP 54034406 B JP 1002122 C JP 53121034 A JP 54034783 B JP 1002124 C JP 53123435 A JP 54034784 B JP 989047 C JP 53011989 A JP 54022230 B CA 1090551 A1 DE 2732753 A1 GB 1562651 A	28-05-1981 15-08-1978 26-10-1979 19-06-1980 23-10-1978 29-10-1979 19-06-1980 27-10-1978 29-10-1979 29-02-1980 02-02-1978 04-08-1979 02-12-1980 26-01-1978 12-03-1980
EP 0878519	A	18-11-1998		JP 11029724 A AT 248208 T AU 738252 B2 AU 6488798 A CA 2237493 A1 CN 1201056 A DE 69817442 D1 EP 0878519 A1 TW 387945 B US 5969019 A	02-02-1999 15-09-2003 13-09-2001 19-11-1998 14-11-1998 09-12-1998 02-10-2003 18-11-1998 21-04-2000 19-10-1999
JP 54077635	A	21-06-1979		JP 1051757 C JP 55041711 B	26-06-1981 25-10-1980

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 01 40 0522

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

03-12-2003

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
EP 0979880	A 16-02-2000	JP	2001073162 A	21-03-2001
		EP	0979880 A1	16-02-2000
		KR	2000017277 A	25-03-2000
		US	6309477 B1	30-10-2001

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82